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TECHNICAL FIELD OF THE INVENTION

5 The technical field of this invention is printers and more particularly the electronics of printers that converts input data in the form of a page description file into control signals for the print engine.

BACKGROUND OF THE INVENTION

10 Screening is the process of rendering the illusion of continuous-tone pictures on displays that are only capable of producing digital picture elements. In the process of printing images, large gray levels of the input picture have to be simulated by the printing device to reproduce a perfect duplicate of the original image. However, in the printed image the pixel resolution can be limited to that which is perceivable by the eye. Hence by grouping the adjacent pixels it is possible to simulate a continuous tone in the image.

15 Screening may take place by a threshold method in one of two categories: bi-level threshold screening; and multi-level threshold screening. In bi-level threshold screening the (x,y) coordinates of the input pixel are used to index into a two dimensional m by n matrix. The individual entries in the matrix are gray level thresholds which are compared against the input pixel gray level. A binary value (0 or 1) is output based on the results of the comparison. Multi-level screening  
20 indexes into a three dimensional lookup table. This three dimensional lookup table is organized as a two dimensional preference matrix of size M by N. The preference matrix is a repeatable spatial tile in the image space. Each entry of the preference matrix has a number of the tone curve which has to  
25 be used for the position of (x,y). The tone curve is the  
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